

I. Summary

1. The incidence of paralytic poliomyelitis has remained stable during the past six weeks, with 51 cases reported as paralytic last week.
2. The 1956 field trial of British Poliomyelitis Vaccine (which employs Brunenders strain instead of Mahoney as the Type I component) established that the vaccine provided substantial protection against paralytic poliomyelitis. "If the small numbers available are taken at their face value the apparent protection conferred was very similar to that observed in the 1954 trial in the United States".
3. An outbreak of aseptic meningitis is being investigated in northwestern Wisconsin. Other outbreaks of aseptic meningitis syndromes, probably due to non-polio viruses, have previously been reported from Tennessee, North Carolina and Virginia.
4. A total of 28 preliminary reports of 1957 triply-vaccinated paralytic cases has been received by PSU.

II. Current Poliomyelitis Morbidity Trends

Total poliomyelitis incidence in the U.S. showed a slight increase during the past week, from 252 cases (including 50 paralytic) for the week ending July 20, to 265 cases (including 51 paralytic) reported to NOVS for the week ending July 27. Figure 1 shows the U.S. incidence curve by weeks for the years 1947 and 1952 through 1957. Last year the total incidence for the 30th week was 658 cases. In 1947, however, only 169 cases were reported.

Table 1 presents the distribution of total cases by State and Region, and of paralytic cases by region, for the past six weeks with six-week totals for the comparable periods of the previous four years. Of the national total of 265 cases, 50 were reported as paralytic, 165 non-paralytic, and 49 unspecified. Thus, although the proportion unspecified increased slightly this week, the number of cases reported as paralytic has remained stable for the past six weeks, with between 42 and 56 paralytic cases reported each week.

Figure 2 shows the U.S. incidence by paralytic status for the past 15 weeks with comparable data for 1955 and 1956. The curves show the notably low proportion paralytic this year compared with 1955 and 1956. (Data as to paralytic status were first reported to NOVS 4 years ago, but it has only been since 1955 that the number reported as "unspecified" has been a small enough proportion of the total to permit even rough comparison with paralytic incidence this year).

Only in the South East region has any significant increase in total polio incidence been reported, with a rise from 48 to 62 cases (See Table 1). Of these 62 cases, 31 (including 28 nonparalytic,

2 paralytic and 1 unspecified) were reported from North Carolina; the majority of these nonparalytic cases represent an outbreak of aseptic meningitis in the City of Durham (See PSU Reports 118 and 119).

III. British Vaccine Study

"The Assessment of the British Vaccine Against Poliomyelitis", a Report to the Medical Research Council by its Poliomyelitis Vaccines Committee, British Medical Journal, June 1, 1957, p. 1271-1277, reviewed the 1956 vaccine program in Great Britain. The program was conducted as a field trial to obtain an evaluation of the efficacy of the vaccine using the Brunenders strain instead of Mahoney as the type I component and to determine the degree of protection conferred by formolized vaccine in pre-school age children.*

Vaccine was available for only 200,000 of the 1,900,000 children whose parents registered them for participation in the program. The registered children were divided into two groups, those born in 1947-50 and those born in 1951-54, and selection for vaccination was made according to month of birth. Those who registered but received no vaccine were used as a comparison group.

Local health authorities in England, Scotland and Wales gave vaccinations from early May through June of 1956; a total of 178,161 children received two inoculations and 32,379 received one. Local reactions following vaccination were mild, usually consisting merely of redness without swelling at the site of injection, and occurred at a recorded frequency varying in four different localities from 1 to 15 percent. Some degree of malaise following first injection was recorded in a relatively consistent 2-3% of children in these four special study areas. Six children developed poliomyelitis within 30 days of an inoculation; in none was there evidence of association with vaccination.

From the beginning of vaccination in May 1956 through January 1957 the study unit received special reports for every notification of poliomyelitis in a child under 10; of these 512 related to registered children, vaccinated and not vaccinated. Further detailed information on each of these cases was then obtained from general practitioners, hospital clinicians and pathologists.

The assessment of the efficacy of the vaccine was based on the cases occurring in the registered population July 1, 1956, through January 31, 1957, the time period following completion of the 1956 vaccination program and prior to the 1957 program. During the period the populations of children vaccinated and of children registered but not vaccinated were known. Of the registered children born in March and November, 148,684

* The 1954 Field Trial in the U.S. suggested that vaccination might be less effective at younger ages.

received the required two injections with not less than three weeks between them. For comparison there remained $1\frac{1}{2}$ million registered children born in other months for which vaccine was not then available (children born in August were excluded since any supplies of vaccine surplus to the demands of March and November were distributed to them on any system that the medical officer found convenient).

An analysis of attack rates in vaccinated and unvaccinated children shows that two doses of vaccine confers significant protection against the paralytic form of the disease in both school and preschool children. Thus, as shown in Table 2, in 74,660 vaccinated children $5\frac{1}{2}$ to $9\frac{1}{2}$ years, only one case of paralytic poliomyelitis occurred whereas 6 cases would have been expected at the attack rate in the corresponding unvaccinated children. In 74,024 vaccinated children age $1\frac{1}{2}$ to $5\frac{1}{2}$, 3 paralytic cases occurred, in place of 15 which would have been expected at the corresponding unvaccinated rate.

The incidence of illness reported as non-paralytic appeared to be uninfluenced by vaccination. An apparent reduction in attack rates after single vaccine inoculation was not statistically significant, and because of this and the unknown nature of this vaccinated population group it was impossible to draw any conclusions regarding the effectiveness of one injection.

Poliovirus was isolated from 92 of the 131 stool specimens which were obtained from paralytic cases. Of the 92 isolations, 75 were Type I. Although the number of isolations is small, Type I infections were predominant in Great Britain, and the Brunenders strain incorporated in the vaccine apparently conferred protection against this prevailing type. Table 3 shows the attack rates of paralytic poliomyelitis cases from whom Type I virus was isolated. In both age groups there is a lower attack rate in vaccinated children than in non-vaccinated; however, in the older group the difference is not statistically different, and in the younger group it is just significant.

In summary, during the 1956 field trial, the incidence of paralytic poliomyelitis in the children inoculated with the British vaccine was about one-fifth of the incidence in the unvaccinated.

IV. Aseptic Meningitis Outbreaks

Report from Wisconsin - Dr. Milton Feig, Director, Section on Preventable Diseases, State Board of Health, Madison, Wisconsin, and Dr. Kenneth Wilcox, Epidemic Intelligence Service Officer, have reported an outbreak of aseptic meningitis in the northwestern part of the state. Only one of these cases had been reported as polio. Preliminary information is as follows:

The town of New Richmond is the center of activity of this disease. It is a community of 3,000 not far from the St. Croix River. The number of cases of this entity which the doctors

can remember is about 50. It is expected on the few home interviews done so far that the number will be at least double that.

The clinical picture in a typical case is characterized by fever, severe headache and periorbital pain with anorexia, nausea and vomiting. There have been varying degrees of stiffness of the neck and back. Some have had muscular aches and pains. Injection of the pharynx has been noted in some patients, but others have had a normal or even pale pharynx. Most of the cases have been in adults. The clinical picture of milder cases without nuchal rigidity is confused by other illnesses consisting mostly of fever, sore throat and cough. Further study will be necessary to clarify the picture. The clinical course is usually three to five days with full recovery in about two additional days. No serious complications have been noted.

Spinal taps have been done on five patients. One doctor reports cell counts of 35, 630, 740, 878. Two of these patients had temporary relief of headache after tap. One patient with severe symptoms and nuchal rigidity had 16,000 cells. The CSF pressure was elevated, sugar and chloride normal, protein slightly elevated. He was ill for about a week and then recovered completely.

V. Triply-Vaccinated Cases

A total of 123 triply-vaccinated cases with onset of illness in 1957 has been reported to PSU through July 31, including 28 paralytic and 95 non-paralytic. The 28 cases provisionally reported as paralytic including three cases listed during the week July 25-31. These three additional cases are listed in Table 4. The third of these, Utah-67, is a revised listing; the case had previously been listed as an under-30-day doubly-vaccinated case in PSU Report No. 114.

VI. Routine Poliomyelitis Surveillance

During the week ending August 1, the Polio Surveillance Unit received reports of one paralytic case and five nonparalytic cases occurring within 30 days of a polio vaccine inoculation.

California reported a triply-vaccinated case in a one year-old male who developed right leg paralysis 20 days following inoculation with Lilly vaccine (Lot No. 697778, one million cc's distributed in April). Site of inoculation was unknown. No other cases have been reported to PSU in association with this lot.

VII. Vaccine Distribution

Table 2 presents a summary of current and cumulative shipments of vaccine (in 1000's of cc's of net bottled vaccine). Excluding export, 4 million cc's were shipped July 1-19.

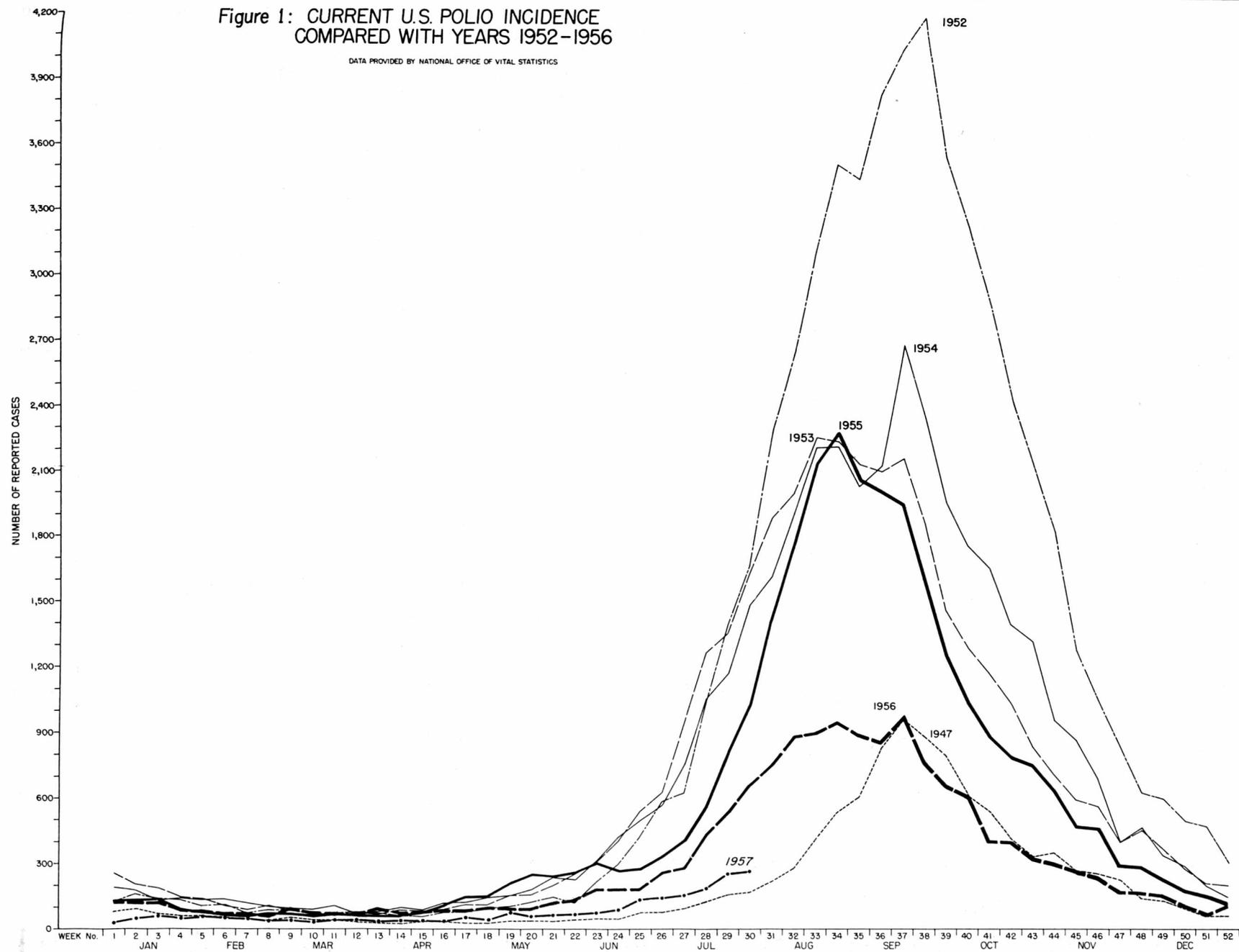
The Vaccine Inventory on July 12, 1957, totaled 11 million cc's including vaccine not shipped by manufacturers and vaccine on hand in State and Local Health Departments, Physicians' Offices and in Commercial Channels.

(This Report was prepared by Dr. Lauri David Thrupp and Miss Helen Forester with assistance from the Statistics Section, CDC.)

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Figure 1: CURRENT U.S. POLIO INCIDENCE
COMPARED WITH YEARS 1952-1956

DATA PROVIDED BY NATIONAL OFFICE OF VITAL STATISTICS



**FIG. 2: U. S. POLIOMYELITIS INCIDENCE BY PARALYTIC STATUS
SIXTEENTH-THIRTIETH WEEKS, 1955-1957
BASED ON PRELIMINARY DATA PROVIDED BY NOVS**

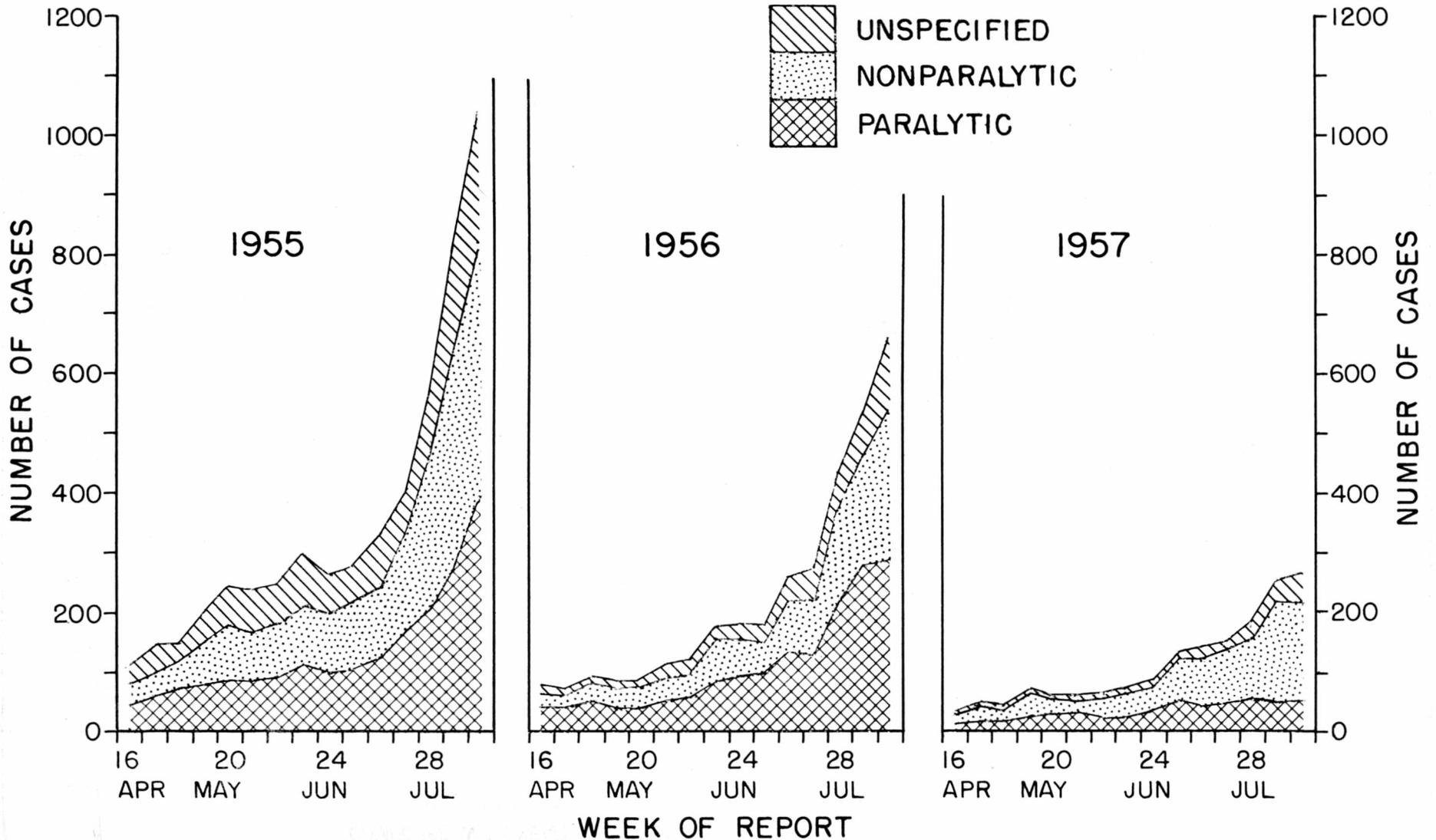


Table 1

TREND OF 1957 POLIOMYELITIS INCIDENCE

State and Region	Cases Reported to NOVS* for Week Ending:						Six Week Total	Comparable Six Week Totals in:			
	6-22	6-29	7-6	7-13	7-20	7-27		1956	1955	1954	1953
UNITED STATES											
Paralytic	51	42	50	56	50	51	300	1136	1266		
Nonparalytic	71	81	88	103	167	165	675	829	1420		
Unspecified	12	19	16	27	35	49	158	374	738		
Total	134	142	154	186	252	265	1133	2339	3424	5533	6356
NORTH EAST											
Paralytic	3	3	-	2	4	4	16	62	351		
Total	5	12	5	7	16	18	63	158	900	470	919
Maine	-	-	-	-	1	-	1	2	10	7	44
New Hampshire	-	-	-	-	-	1	1	-	25	5	29
Vermont	-	-	-	-	-	-	-	7	9	5	6
Massachusetts	-	-	1	-	2	2	5	14	431	46	74
Rhode Island	-	-	-	-	-	-	-	-	18	5	17
Connecticut	1	2	-	2	3	1	9	9	64	61	63
New York	4	6	4	4	7	8	33	87	216	191	449
New Jersey	-	3	-	1	-	6	10	21	51	74	107
Pennsylvania	-	1	-	-	3	-	4	18	76	76	130
NORTH CENTRAL											
Paralytic	6	3	2	6	16	9	42	341	272		
Total	17	12	25	30	70	76	230	798	907	1523	2021
Ohio	4	-	2	8	10	10	34	69	142	209	385
Indiana	1	2	2	-	4	5	14	49	59	83	107
Illinois	2	2	3	7	13	14	41	408	130	217	343
Michigan	-	3	6	3	10	12	34	54	153	276	317
Wisconsin	-	1	4	7	15	8	35	36	129	38	65
Minnesota	1	-	-	-	2	8	11	15	62	83	301
Iowa	2	2	2	2	2	2	12	56	89	228	87
Missouri	4	1	3	2	6	8	24	63	34	81	179
North Dakota	-	-	-	-	-	-	-	4	15	19	16
South Dakota	-	1	-	-	-	1	2	2	5	15	37
Nebraska	1	-	2	1	4	6	14	10	50	128	70
Kansas	2	-	1	-	4	2	9	32	39	146	114
NORTH WEST											
Paralytic	-	-	-	1	2	2	5	38	83		
Total	-	2	2	2	7	7	20	75	131	160	116
Montana	-	-	-	-	1	-	1	10	6	11	26
Wyoming	-	2	-	-	-	1	3	4	8	52	11
Idaho	-	-	1	1	1	3	6	23	42	9	6
Washington	-	-	-	-	-	1	1	21	34	43	49
Oregon	-	-	1	1	5	2	9	17	41	45	24

* National Office of Vital Statistics.

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Table 1 (Continued)

State and Region	Cases Reported to NOVS* for Week Ending:						Six Week Total	Comparable Six Week Totals in:			
	6-22	6-29	7-6	7-13	7-20	7-27		1956	1955	1954	1953
SOUTH EAST											
Paralytic	13	10	12	15	7	18	75	116	155		
Total	34	36	37	54	48	62	271	286	487	1109	1622
Delaware	-	-	1	-	-	-	1	2	7	9	6
Maryland	4	-	-	-	-	1	5	12	28	14	101
D. C.	-	-	-	-	-	1	1	1	10	9	16
Virginia	3	-	2	7	2	2	16	32	68	73	205
West Virginia	-	1	-	1	2	-	4	15	15	21	111
North Carolina	4	1	6	7	17	31	66	44	72	122	408
South Carolina	10	7	5	9	6	9	46	20	63	91	50
Georgia	2	3	3	4	2	-	14	34	32	152	132
Florida	1	5	-	14	2	7	29	65	55	302	106
Kentucky	1	-	-	5	8	6	20	32	53	121	102
Tennessee	9	16	19	7	7	3	61	15	45	105	230
Alabama	-	3	1	-	2	2	8	14	39	90	155
SOUTH CENTRAL											
Paralytic	23	25	30	20	15	11	124	328	251		
Total	55	64	67	52	68	68	374	602	634	1374	1035
Mississippi	12	3	2	4	8	10	39	43	46	173	120
Arkansas	6	4	3	3	4	5	25	30	39	95	83
Louisiana	4	12	12	2	9	6	45	160	69	164	162
Oklahoma	5	6	5	5	14	9	44	58	73	173	173
Texas	28	39	45	38	33	38	221	311	407	769	497
SOUTH WEST											
Paralytic	6	1	6	12	6	7	38	251	154		
Total	23	16	18	41	43	34	175	420	371	897	643
Colorado	-	-	1	-	-	1	2	14	31	55	34
New Mexico	4	-	1	3	4	1	13	10	36	16	27
Arizona	-	1	-	2	2	2	7	21	13	58	66
Utah	-	1	2	-	-	2	5	32	5	19	34
Nevada	-	-	1	1	-	-	2	3	20	24	11
California	19	14	13	35	37	28	146	340	266	725	471
TERRITORIES											
	-	-	1	-	2	-	3	12	41		
Alaska	-	-	-	-	-	-	-	2	3	47	23
Hawaii	-	-	-	-	-	-	-	3	12	38	8
Puerto Rico	-	-	1	-	2	-	3	13	21	-	4

* National Office of Vital Statistics.

Table 2

Attack Rates of Paralytic Poliomyelitis* in Children in Selected Months of Birth Given Two Inoculations and in Registered, Unvaccinated Children of all other Months of Birth (excluding August).

<u>1947-50 Births</u>	<u>Number of Children</u>	<u>Paralytic</u>		<u>Non-paralytic</u>	
		<u>Number of Cases</u>	<u>Rate per 100,000</u>	<u>Number of Cases</u>	<u>Rate per 100,000</u>
Vaccinated	74,660	1	1.3	9	12.1
Not Vaccinated	1,116,359	91	8.2	114	10.2
 <u>1951-54 Births</u>					
Vaccinated	74,024	3	4.1	2	2.7
Not Vaccinated	446,857	90	20.1	46	10.3

Table 3

Attack Rates of Paralytic Poliomyelitis with Isolation of Type I Virus*

<u>1947-50 Births</u>	<u>Number of Children</u>	<u>Number of Cases</u>	<u>Rate per 100,000</u>
Vaccinated	74,660	1	1.3
Not Vaccinated	1,116,359	35	3.1
 <u>1951-54 Births</u>			
Vaccinated	74,024	1	1.4
Not Vaccinated	446,857	38	8.5

*Cases with onset July 1, 1956 - January 31, 1957.

Table 4

1957 Paralytic Poliomyelitis Following Three Inoculations of Vaccine

(Reports through July 31, 1957)

3 V Case No.	State	County	Ini- tials	Age	Sex	Date 1st Symp.	Cerebro- Spinal Fluid	Site of Para.	Dates of Vacc. Inoc.	Mfr.	Lot No.
65	Cal.	Contra Costa	SF	1	M	6-6-57		RL	?	?	?
									?	?	?
									5-14-57	L	679778
66	N.J.	Bergen	NB	5	M	6-5-57		?	?	?	?
									?	?	?
									?	?	?
67	Utah	Salt Lake	CF	19	F	4-23-57		Bulbar	?	?	?
									?	?	?
									4-10-57	L	?

Comment: A non-polio virus, as yet unidentified, was isolated by Utah State Bureau of Laboratories in monkey kidney tissue culture. Sera collected 4-28 and 5-14 showed no rise in Types I, II, or III polio antibody titers. (Also listed as under-30-day case in PSU Report #114.)

Table 5

Poliomyelitis Vaccine Shipment Summary

(Reports from Polio Vaccine Activity, BSS, USPHS, through 7-26-57)

Vaccine Shipments (in 1000's of cc's)

<u>Period</u>	NFIP*** <u>Sponsored Clinics</u>	<u>Public Agencies</u>	<u>Commercial Channels</u>	<u>Export ****</u>	<u>Total*</u>
1955	13,541	7,893	6,233**	-	27,667
1956	194	45,588	24,784	6,477	77,043
1957					
January - March	8	19,306	13,483	4,111	37,538
April	-	8,639	5,161	1,360	15,161
May	73	5,365	3,767	536	9,740
June	70	2,734	1,349	378	4,531
July 1 - 19	-	1,811	2,270	190	4,271
Cumulative Totals	13,886	91,967	57,046	13,053	175,952

Vaccine Inventory (in 1000's of cc's)

Week Ending 7/19/57

Vaccine Cleared for distribution by the National Institutes of Health but not shipped	6,168
Vaccine in State and Local Health Departments	2,883
Vaccine in Commercial Channels and Physicians Offices	2,054

* Totals do not add because figures are rounded to nearest 1000 cc's.

** Includes 562,740 cc's shipped through commercial channels prior to inauguration of the Interstate Distribution Program in August, 1955.

*** Vaccine purchased by the National Foundation for Infantile Paralysis and distributed for inoculation of first and second grade children in locally organized school clinics.

**** Regulated under Department of Commerce Export Policy.

